

SUMMARY OF INDIAN STANDARD

IS 10748:2004

Hot - Rolled steel strip for welded tubes and pipes - Specification

(Second Revision)

The history of steel pipes and tubes can be traced back to early 1800s London, when **William Murdock** had the bright idea of joining together barrels from used muskets (a type of long barrelled firearm) to transport coal gas with which he powered a system of coal burning lamps to light the city. A few years later, another Englishman, **Cornelius Whitehouse**, came up with the **butt-weld** process for joining strips of steel together to make pipes and tubes, which continues to be used to this day to make welded steel pipes and tubes. Subsequently, methods like the process of manufacturing seamless tubes through extrusion i.e. without welding, have also come into use. However, welded steel tubes and pipes are still commonly used in many applications, in the construction, manufacturing and other industries for the transport of water, gases, chemicals, sewage etc.

The **quality of steel tubes and pipes** depends mainly on the quality of the steel strips that are used to make these pipes. The steel strips are manufactured by hot-rolling steel slabs/plates etc. in a semi-continuous/continuous or reversing strip mill, to the required thickness. These strips are then welded end-to-end i.e. butt-welded, to make the tubes or pipes.

The quality of the steel strips is therefore, most critical to ensure that the pipes and tubes manufactured are also of good quality. Pipe/tube makers have the following expectations from good quality hot rolled steel strips for making welded pipes and tubes:

- They should have adequate mechanical **strength, formability and ductility** to withstand the different mechanical stresses and strains encountered during the pipe/tube manufacturing process and during use.
- They should have adequate **weldability**.
- They should have sufficient **corrosion resistance** to withstand the corrosive conditions expected during use.
- They should have **uniform and consistent dimensions** i.e. width and thickness as per requirement for ease of manufacturing and so that the final pipes and tubes are of uniform width and thickness.
- They should have **good surface quality** and should be reasonably **free from defects**.

This Indian Standard IS 10748:2004 covers the requirements for weldable quality hot rolled carbon steel strips in coils intended for the manufacture of welded steel tubes and pipes.

IS 10748:2004 helps ensure the quality of hot rolled steel strips for making welded pipes and tubes, by addressing the above expectations, as follows:

- It specifies the required chemical composition and mechanical properties for the strips, thereby ensuring **mechanical strength, formability and ductility** are according to expectations.
- The chemical composition prescribed, especially the carbon equivalent value, also ensures the **weldability** of the steel.
- It also prescribes, under chemical composition, the minimum content of manganese in the steel, as well as for alloying elements like chromium, which helps improve **corrosion resistance** of the steel.
- It specifies the dimensions as well as dimensional tolerances, ensuring **uniform dimensions** as per requirements
- It specifies that the steel shall be **free from defects** such as laminations, segregations etc. thereby ensuring
- It also specifies the different treatments that can be given to the material to improve **surface quality** such as skin pass rolling, pickling (chemical treatment to remove scale and grease etc.), oiling, and annealing/normalising.

In addition to the above, the standard also prescribes the requirements for packing and marking the product.

To control the quality of this product, the Ministry of Steel, Government of India has issued the **Steel and Steel Products (Quality Control) Order** mandating that only those hot rolled carbon steel strips in coils intended for the manufacture of welded steel tubes and pipes which meet the requirements of IS 10748:2004 and bear the **BIS Standard Mark (ISI Mark)**, are permitted to be produced, sold, distributed or imported into India.

Therefore, pipe/tube manufacturers who value **quality** should always choose **ISI Marked** hot rolled carbon steel strips which are produced by a **BIS certified manufacturer** to meet the requirements of the Indian Standard **IS 10748:2004**, for the manufacture of good quality welded steel tubes and pipes.